REMARKS

This Amendment replaces the Amendment filed July 15, 2004. The Examiner's Amendment mailed January 23, 2004, is incorporated herein. No other changes to the Amendment filed July 15, 2004, are made.

Applicant acknowledges with appreciation the allowance of claims 28-52 and the indication of allowability of claims 2-11 and 54, but for their dependence on a rejected base claim. Applicant amends claims 1, 53, 63, and 66. Consideration of the following remarks is respectfully requested.

Claims 63 and 64 are objected to based on informalities. The amendment to claim 63 remedies any confusion caused by the typographical error previously in claim 63. The objection is respectfully requested to be withdrawn.

Claims 1, 14-20, 23, 25, 53, 57-63, 65, and 66 stand rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent 5,441,595 ("Yamagata et al."). Applicant respectfully traverses this rejection.

Claim 1 defines a method of forming a microstructure by micromachining and recites "providing a substrate in a processing chamber, said substrate comprising an etchable material and having at least one contoured feature" and "generating a stable ion-containing etching plasma in said processing chamber, said plasma etching the contoured feature of said substrate" and "generating a magnetic field, said magnetic field being adjustable in intensity and direction" and "applying an RF bias power to said substrate, said RF bias power being adjustable in intensity" and "controlling said etching of the contoured feature by creating an electron differential at said contoured feature by adjusting at least one of said magnetic field intensity, magnetic field direction, and RF bias power intensity during said etching, thereby

forming a second contoured feature at said contoured feature." This method is not anticipated by Yamagata et al.

Yamagata et al. does not disclose "generating a magnetic field, said magnetic field being adjustable in intensity and direction" and "applying an RF bias power to said substrate, said RF bias power being adjustable in intensity" and "controlling said etching of the contoured feature by creating an electron differential at said contoured feature by adjusting at least one of said magnetic field intensity, magnetic field direction, and RF bias power intensity during said etching, thereby forming a second contoured feature at said contoured feature." Yamagata et al. does indicate that a magnetic field can be generated in its apparatus; however, there is no disclosure that the magnetic field is adjustable in intensity and direction, or for that matter, adjustable in either during said etching to form a second contour at the first contour. The magnetic field of Yamagata et al.'s apparatus can only be generated by the magnetic ring coil (46) shown in figure 8. There is no indication that this has any controllability other than being turned on or off, thus any magnetic field disclosed by Yamagata et al. is not adjustable as recited by the claim. Also, there is no disclosure in Yamagata et al. that the RF bias power disclosed thereby is adjustable in intensity; it is disclosed as only being cycled on or off. For these reasons, the method of Yamagata et al. is not the same as that of claim 1.

The method of Yamagata et al. relates only to cycling an RF bias and ground potential during dry etching of a layer to switch between isotropic and anisotropic etching. In semiconductor technology, isotropic etching is non-directional removal of material from a substrate via a chemical process using an etchant substance. Anisotropic etching, on the other hand, refers to directional etching that does not tend to spread across the material being etched. Thus, the Yamagata et al. method provides a means to vary a via (no other feature is disclosed) cross-section in a symmetrical

manner only, as is clearly illustrated by figures 10a-10d. In contrast to this, the claimed method incorporates a magnetic field that is adjustable in intensity and direction and an RF bias power that is adjustable in intensity and thereby allows not only symmetrical variance in etching a contoured (including, but not limited to vias/trenches/holes) workpiece, but also allows for controlled asymmetrical variance in etching and thereby provides for an important advancement over the prior art.

For at least the above reasons, independent claim 1 and dependent claims 2-27 are not anticipated by Yamagata et al. Applicant respectfully requests that the 35 U.S.C. § 102(b) rejection of claims 1, 14-20, 23, and 25 be withdrawn.

Claim 53, as amended, defines a method of plasma etching a material layer to form a microstructure and recites, in part, "asymmetrically etching said material layer at said at least one contour with said plasma to form a second contour at said at least one contour." Such a method as recited is impossible using the techniques disclosed by Yamagata et al., which only contemplates and discloses the symmetrical varying of a via during etching, and the reference does not suggest the possibility of asymmetrical etching as recited. Applicant respectfully request that the 35 U.S.C. § 102(b) rejection of independent claim 53 and dependent claims 57-63 and 65 be withdrawn.

Claim 66 defines a method of forming a plasma etched device and recites, in part, "generating a magnetic field at said workpiece and controlling said magnetic field in intensity and direction to vary a location of impingement of said free electrons on said workpiece, said location of impingement of said ions on said workpiece being effected by the location of impingement of free electrons on said workpiece, thereby forming a contoured feature at a contour of said workpiece" and "applying an RF bias power to said workpiece during ion etching and adjusting said RF bias power during etching to vary the intensity of etching." This in not disclosed by Yamagata et al.

Yamagata et al. does not disclose "controlling said magnetic field in intensity and direction to vary a location of impingement of said free electrons on said workpiece . . . thereby forming a contoured feature at a contour of said workpiece;" this is not even suggested by Yamagata et al. Additionally, Yamagata et al. does not disclose "adjusting said RF bias power during etching to vary the intensity of etching." Yamagata et al. merely turns the RF bias on and off in a cycle and does not ever very the RF bias power intensity during etching. For each of these reasons Yamagata et al. does not anticipate claim 66 and the 35 U.S.C. § 102(b) rejection thereof is respectfully requested to be withdrawn.

Claims 1, 12-27, 53, and 55-66 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yamagata et al. Applicant respectfully traverses this rejection.

Claims 12-27 depend from claim 1 and claims 55-65 depend from claim 53. Claim 66 is independent. Each of claims 1, 53, and 66 have already been discussed above as being patentable over Yamagata et al. as not anticipated and also would not have been obvious over the reference for the same reasoning. The depending claims, 12-27 and 56-65, are patentable over Yamagata et al. for at least the same reasoning as set forth for the independent claims above. Applicant respectfully requests that the 35 U.S.C. § 103(a) rejection of claims 1, 12-27, 53, and 55-66 be withdrawn.

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In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

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Respectfully submitted,

By _____

Thomas J. D'Amico
Registration No.: 28,371
Ryan H. Flax
Registration No.: 48,141
DICKSTEIN SHAPIRO MORIN &
OSHINSKY LLP
2101 L Street NW
Washington, DC 20037-1526
(202) 785-9700
Attorney for Applicant